

# New formula to counter chemical, bio attacks

*By Gary Sheftick*  
*Army Link News*

ABERDEEN PROVING GROUND, Md. — Researchers at the Army’s Edgewood Chemical Biological Center are developing a powder with enzymes designed to neutralize nerve agents and biological threats such as anthrax.

“Just add water” to the powder and the formula will be able to decontaminate vehicles and other surfaces following a biological or chemical attack, according to Dr. Joseph DeFrank, a biological researcher who has been working on the solution for 17 years.

Last year DeFrank and the Army patented one of his enzymes — Organo Phosphorous Acid Anhydrolase — designed to neutralize G-type nerve agents such as sarin. DeFrank said his team is now talking with companies about possible large-scale production of the enzyme.

The Edgewood team is experimenting with about half a dozen other enzymes that DeFrank said he would like to add to the powder formulation he calls the “Edgewood Enzymatic Decon System.”

One of the enzymes would neutralize the VX-type nerve agent. Another

enzyme would counteract sulfur mustard, an oily chemical that became known as “mustard gas” during World War I. “It’s still a real threat,” DeFrank said of the mustard blister agent.

Other enzymes could neutralize biological agents such as anthrax, the plague and tularemia.

Anthrax is among the toughest bacteria to fight, DeFrank said, because it’s hard to kill as a spore. But once the spores come in contact with a food source such as sugar, they begin to germinate and are then easier to eliminate, DeFrank said. So he plans to add sugar or amino acids to his powder formula in order to trick the anthrax spores into germinating.

Along with enzymes, DeFrank said his team is also experimenting with a number of plant oils, spices and herbs that might be used to counter dangerous bacteria. He said some of the common spices and herbs came into use because their ingredients helped preserve foods by killing bacteria that spoiled the foods.

So some of the herbs and spices might be useful, DeFrank said, added to his Enzymatic Decon powder.

“The goal is to have a dry powder formulation — something like laundry

detergent, with a number of enzymes in it,” DeFrank said.

DeFrank’s powder would be used with any water-based application system, such as aircraft de-icing solutions, fire-fighting foam or aqueous degreasers.

In an incident where chemicals may have been released, the enzymatic solution would be used by first responders to quickly neutralize the chemicals before they have a chance to contaminate a wider area, officials said. They added that the catalytic enzymes can neutralize a wide range of chemicals, and are non-toxic, non-corrosive, environmentally safe and affordable.

And DeFrank said the enzymatic powder would not be limited to just battling terrorist attacks. He said the formula could be used by firemen to neutralize large spills of chemicals such as pesticides.

“It’s not something that is just going to sit on a shelf,” DeFrank said of the formula.

Edgewood is now looking to enter into licensing agreements with foam manufacturers and research and development firms to make the technology available for commercial use, officials said.

DeFrank said he believes a powder

formulation with ability to neutralize some agents should be ready for commercial production in less than a year.

“Having all the multiple enzymes available will take some time longer,” he said.

The Edgewood team has already produced a limited amount of the Organo Phosphorous Acid Anhydrolase enzyme in the laboratory. DeFrank said the Edgewood process engineering facility has a fermentation capacity for up to 1,000 liters — which can generate one pound of enzyme, enough to make about 1,300 gallons of decontaminant.

A sample of the enzyme was provided a while back to the Army’s Technical Escort Unit at Edgewood for use in the soldiers’ backpacks of foam decontaminant, DeFrank said.

Edgewood is the Army’s principal research and development center for chemical and biological defense technology, engineering and services, and is under the auspices of the U.S. Army’s Soldier Biological and Chemical Command.

More information on the Edgewood Chemical Biological Center can be found at <http://www.sbccom.apgea.army.mil/RDA/ecbc>.

## *Anthrax threat suspends two popular mail programs*

*By Jim Garamone*  
*American Forces Press Service*

ALEXANDRIA, Va. — Military postal officials reluctantly suspended the “Operation Dear Abby” and “Any Service Member” postal programs because of the anthrax threat.

Alan Estevez, acting assistant deputy undersecretary of defense for transportation policy, suspended the two programs in a signed Oct. 30 memorandum to the Military Postal Service Agency. The memo formalizes an interim agency suspension issued Oct. 16. Effective immediately, mail will no longer be accepted for these anonymous-sender programs.

The Dear Abby program, founded by the newspaper advice columnist, has delivered mail to U.S. servicemembers overseas during the holiday season for 17 years. The “Any Service Member” mail program grew out of Desert Shield and Desert Storm, but really cranked up during the U.S. assistance to Bosnia in 1995, officials said.

Both programs let U.S. servicemembers overseas know that fellow Americans support them and appreciate their sacrifices.

The most critical issue surrounding these mail programs is personnel safety, said Military Postal Service Agency officials.

“Both of these programs create an avenue to introduce mail into the system from unknown sources,” officials said. “The recent mail-related attacks have demonstrated the vulnerability of the postal system.”

Mail handling has become more sensitive and time consuming, officials said, and the increased volume of mail that would result from the Dear Abby and Any Service Member programs could impact the quality of military postal service and force protection.

U.S. Postal Service officials said a ton of letter mail equals about 71,000 typical first-class letters.

# Edwards to test military’s new fighter

*By Leigh Anne Bierstine*  
*Air Force Flight Test Center Public Affairs*

EDWARDS AIR FORCE BASE, Calif. — The competition is over but preparations to fully develop the Joint Strike Fighter are in full swing at the Air Force Flight Test Center here.

The government’s selection of Lockheed Martin Corp., as the prime contractor Oct. 26 allowed the JSF to enter its next acquisition phase — system development and demonstration. This phase will evolve the fighter, now known as the F-35, from a concept demonstrator to a combat-capable fighter aircraft.

Initial plans call for 14 test aircraft to be built, with seven going to Edwards and seven going to Naval Air Station Patuxent River, Md., said Joe Dowden, the JSF Site and Integrated Test Force director at Edwards. Both sites will serve as principal testers for the JSF demonstration. Both will conduct testing on all of the JSF variants, including the Air Force, Navy and Marine versions, as well as the foreign version of the aircraft.

Lockheed Martin Corp.’s winning aircraft designs for the Air Force, Navy, Marine Corps and United Kingdom will be developed throughout the next 48 months.

The first JSF aircraft is set to arrive here for flight testing in late 2005, Dowden said.

With the 10-and-a-half year contract awarded, Dowden said he is starting to build up the integrated test force here while working closely with his counterparts at the JSF integrated test force in Patuxent River. Both will support a three-phased block approach to evolve the aircraft’s mission capabilities.

The test program encompasses development and demonstration of more than 46 different weapon configurations and associated mission systems capabilities, Dowden said.

“Our developmental, demonstration test and evaluation challenge now is to improve our joint processes between Edwards and Patuxant River Naval Air Station so that we ensure seamless testing of the Air Force, Navy, Marine Corps and the United Kingdom variants on the West and East Coasts,” Dowden said. “All this will be necessary to get the JSF aircraft to the warfighters on schedule, with the capabilities they will need for future defense of our national interests.”

The test force is also planning to receive more than \$30 million in military construction funds to renovate and add facilities that will support and house the JSF test fleet, Dowden said.

Future funding includes \$20 million planned for 2004 to support developmental testing with an additional \$10 million planned for 2008 to support operational testing, he said.

The Air Force will be the largest JSF customer, purchasing 1,763 of the conventional takeoff and landing version of the aircraft. The Air Force version is designed primarily for air-to-ground combat to replace the F-16 Fighting Falcon and A-10 Thunderbolt II and to complement the F-22 Raptor.

The Marine Corps is expected to purchase 609 of the short takeoff and vertical landing aircraft variant. The United Kingdom’s Royal Air Force and Navy are also expected to order 200 of the STOVL variant. The Navy is expected to buy about 480 of the carrier variant.

“This last flight closed out the most successful X demonstration flight-test program in this nation’s history during which many aviation firsts were achieved and new test and evaluation benchmarks set,” Dowden said.

For more information on the JSF visit the website <http://www.jast.mil/IEFrames.htm>.  
*(Story courtesy of Air Force Print News)*